

Appln. No.: 09/930,903
Amdt. Dated February 14, 2005
Reply to Office Action dated October 14, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. A method for sending ~~an encrypted~~ a message, said method comprising the steps of:
 - a) generating by a sender a password P;
 - b) sending the password P to a message recipient over a first channel;
 - c) generating authentication information by the sender for server authentication of the message recipient;
 - ad) generating by the sender a random number as an initialization vector IV4;
 - be) generating by the sender a private key PK as $H(IV4 \parallel P)$, where P is a password known to a message recipient;
 - e)f) generating by the sender an encryption $ENC = E(M \parallel H(M), PK)$, where E is a predetermined symmetric key encryption algorithm, M is the message and H() is an agreed upon hashing algorithm; and
 - eg) sending the authentication information and (IV4, ENC) from the sender to said message recipient the server over a second channel;
 - h) authenticating the message recipient over a third channel using the information;

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l) sending ENC from the server to the message recipient over the third channel only when the message recipient has been authenticated by the server.

7. A method as described in claim 6 comprising the further step of receiving authentication of said message recipient prior to sending (IV4, ENC).

8. A method as described in claim 7-6 where said message recipient is authenticated by the steps of:

- ~~a) generating a password P;~~
- ~~b) sending said password P to said message recipient over a first, secure channel;~~
- ea) generating by the sender a first random number as a first initialization vector IV1;
- eb) generating by the sender $H(IV1 \parallel P)$ as an authentication key AK;
- ec) generating by the sender an authentication string AS as $E(ACNST1, AK)$, where ACNST1 is a predetermined constant and E is a predetermined symmetric key encryption algorithm;
- d) sending IV1 and AS to the server over the second channel
- ~~fe) generating by the server a second random number as a second initialization vector IV2;~~
- gf) sending from the server said vectors IV1 and IV2 to said message recipient over a the second-third channel;
- g) generating by the message recipient a third random number as a third initialization vector IV3;
- h) regenerating by the message recipient the authentication key AK;
- i) regenerating by the message recipient the authentication string AS;
- ~~h) receiving a third random number as a third initialization vector IV3 and an authentication response AR from said recipient over said second channel;~~
- ij) generating by the message recipient an authentication response key ARK as $H(IV2 \parallel IV3 \parallel AS)$;

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k) generating by the message recipient the authentication response AR as $E(\text{ACNST2}, \text{ARK})$, where ACNST2 is a predetermined constant and E is a predetermined symmetric key encryption algorithm;

l) sending from the recipient to the server IV3 and AR;

m) regenerating by the server the authentication response key ARK as $H(\text{IV2} \parallel \text{IV3} \parallel \text{AS})$;

in) generating-computing by the server a decryption $D(\text{AR}, \text{ARK})$, where D is a symmetric decryption algorithm corresponding to E; and

ko) authenticating said message recipient only if $D(\text{AR}, \text{ARK}) = \text{ACNST2}$, where ACNST2 is a second predetermined constant.

9. (Canceled)

10. A method as described in claim 6 where H is an encryption algorithm defined hash algorithm using said encryption algorithm E.

11. A method as described in claim 10 where said encryption algorithm is expressed in less than 1000 bytes of code; whereby software comprising said algorithm can be quickly downloaded to a user's system.

12. A method as described in claim 11 where said encryption algorithm is an RC4 algorithm.

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

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18. A method for receiving an encrypted message that was originally sent by a sender to a server over a second channel, said method comprising the steps of:

a) receiving (IV4, ENC) from a server over a third channel, where $ENC = E(M \parallel H(M), PK)$, M is said message, and E is a predetermined encryption algorithm, IV4 is a random number as an initialization vector, and H() is an agreed upon hashing algorithm;

b) generating PK as $H(IV4 \parallel P)$, where P is a password received from a the sender of said message over a secure-first channel;

c) generating $D(ENC, PK) = (M \parallel H(M))$, where D is a symmetric key decryption algorithm corresponding to E;

d) calculating H(M) from said value of M generated in step c; and

e) accepting said generated value of M only if said calculated value of H(M) equals said value of H(M) generated in step c.

19. A method as described in claim 18 where H is an encryption algorithm defined hash algorithm using said encryption algorithm E.

20. A method as described in claim 19 where said encryption algorithm is expressed in less than 1000 bytes of code; whereby software comprising said algorithm can be quickly downloaded to a user's system.

21. A method as described in claim ~~16~~19 where said encryption algorithm is an RC4 algorithm.

22. A method as described in claim 18 where said initialization vector IV4 and said encryption ENC are received from said sender through a server.

23. (Canceled)

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- 24. (Canceled)
- 25. (Canceled)
- 26. (Canceled)
- 27. (Canceled)
- 28. (Canceled)
- 29. (Canceled)
- 30. (Canceled)
- 31. (Canceled)
- 32. (Canceled)
- 33. (Canceled)
- 34. (Canceled)
- 35. (Canceled)
- 36. (Canceled)